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Message Network

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Description

The invention relates to a communication network for the design and operation of individual communication connections.

Such communication networks are presently operating in a variety of designs and for various applications.

On a world-wide basis, the most common type of such a communication network is the classical telephone network which, in its modern configuration, serves not only the original purpose of voice transmission, but is also used for other forms of communication, such as data transmission, etc.

Substantially, such communication networks consist of two operating sectors.

One operating sector comprises the centralized line side, which is assigned to the participating subscribers for no longer than the duration of a communication connection and only within the framework of such an individual communication connection. This applies to the lines which are necessary to establish a connection and to operate an individual connection.

The other sector is assigned individually to each subscriber of the communication network, i.e. the so-called subscriber side.

More than half of the cost involved in the installation and operation of such a communication network applies to the above named subscriber

side, which substantially consists of the lines leading to the subscriber and the lines installed at the subscriber end, known as the network termination. Also to be added are the lines and connectors (jacks) installed in the building at the subscriber end. A third sector to be added to those two sectors consists of the terminal equipment. Today, subscribers decide to a large extent what technically suitable types of terminal equipment they wish to connect to their jacks in that sector.

In such communication networks known in prior art, it is regarded as very unsatisfactory that — in spite of multiple functions such as with ISDN technology — the above named subscriber side is in use only for short periods of time, while it remains idle most of the time (about 90%).

It is therefore the object of the present invention to create a communication network for establishing and operating individual communication connections in which the central office is connected by firmly dedicated local lines to a network termination circuit to which each subscriber can be connected, thus allowing a flexible and therefore better utilization of the subscriber side.

This object is achieved according to the invention in that the network termination circuit is provided with a radio interface and provided with a local identity.

Such a solution has the advantage that the network termination circuit is no longer individualized and kept busy by the one subscriber connected to it.

According to an embodiment of the invention, it is provided that the network termination circuit is assigned to a subscriber terminal for no longer than the duration of an individual communication connection.

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By means of this measure, the network termination circuit is individualized only for a relatively short period of time by a subscriber, whose identity is provided in the terminal (SIM card) in a manner actually known in prior art from modern mobile communication.

In accordance with another embodiment of the invention, each subscriber-specific terminal is provided with a transmitter/receiver that is compatible with a radio interface.

By this means, it is possible, for example, to achieve a higher degree of flexibility in comparison with cordless telephones known in prior art.

With this above-described embodiment, it is provided according to a further development that each subscriber-specific terminal can be connected to any network termination circuit that becomes available.

According to a further development of the invention, it is possible on the one hand to increase the flexibility in using a line and on the other hand to give the subscriber the greatest possible mobility, since it is possible within the framework of an individual communication connection to switch a subscriber-specific terminal from one network termination circuit to another. This so-called "hand-over" technology, which is actually known from modern mobile communication systems such as GSM, can also be used to advantage within the context of the present invention.

For existing conventional communication networks, which are equipped with subscriber-specific network termination circuits, one embodiment of the invention provides that these network termination circuits are additionally equipped with a radio interface and that by means of suitable changeover devices they can be used in one of the two operating modes ("subscriber-specific" or "only line-specific"). "Subscriber-specific" is

defined here as the conventional identity assigned jointly to the network termination circuit and the subscriber.

In the above explanations, reference was made repeatedly to modern mobile radio systems such as GSM, etc. Instead of cables on the subscriber side, which are customary in conventional communication networks, especially telephone networks, such mobile radio systems have so-called radio cells with base stations (BS) and base station controllers (BSC) which are connected to the mobile services switching centres (MSC) via special lines or radio relay links. The cost of these mobile radio systems is considerable, since there must be a large number of the above named radio cells — depending on the limited radio range of the terminals used.

The communication network according to the invention has advantages in comparison with those systems.

First of all, the cost involved is limited to the radio link between the terminal and a network termination circuit. Since in existing networks, the cost of network termination circuits is no higher than in two adjacent buildings equipped with telephone connections, it is possible to make do with a lower transmission output, especially for the terminals, which on the one hand considerably reduces the cost of the power supply and on the other hand greatly reduces EMV, a known danger from high-frequency radiation that can cause brain damage.

Secondly, solutions which have proven successful in known mobile radio systems, in connection with the design and operation of the radio interface, can be adopted in principle. Already mentioned was the identification of the subscribers or their terminals by means of a SIM card, sometimes in connection with a PIN code, as well as the so-called "hand-

over", i.e. the transfer of an existing connection from one network termination circuit to another (adjacent) network termination circuit.

When the communication network according to the invention is introduced to an existing conventional network, it is desirable that the existing operation can be continued. For that purpose, the network termination circuits are provided with an additional radio interface. To allow a choice between an existing "fixed" connection ("individual subscriber connection") and a new "line-specific" subscriber connection, a changeover device must be provided, which may operate, for example, in such a way that the "fixed" subscriber connection is given priority, and in case of a radio-operated actuation, the latter is changed over from the affected network termination circuit to an adjacent network termination circuit in the manner of the already mentioned prior-art "handover".

Only in areas with sparse or no population, where no telephone system exists, lines would have to be laid with network termination circuits and radio interfaces at appropriate intervals.